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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,384	03/18/2004	Reiyao Zhu	HT4000USNA	5474

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EXAMINER	
PIZIALI, ANDREW T	
ART UNIT	**PAPER NUMBER**
1771	

DATE MAILED: 11/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/803,384	ZHU, REIYAO	
	Examiner	Art Unit	
	Andrew T. Piziali	1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-11 and 13-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-11 and 13-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/19/2006 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 11, 13-14 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,787,228 to Campbell et al. (hereinafter referred to as Campbell) in view of USPN 4,025,491 to Nelson et al. (hereinafter referred to as Nelson).

Regarding claims 1, 11, 13-14 and 19, Campbell discloses a yarn suitable to provide arc and flame protection comprising modacrylic fibers and aramid fibers (see entire document including column 1, lines 13-17 and column 4, lines 9-56). Campbell discloses that the yarn may comprise at least about 70 weight percent modacrylic fibers (about 70% is considered to read on 60%) and at least about 3 weight percent aramid (column 4, lines 9-56).

Campbell does not specifically mention the addition of cotton fibers, but Nelson discloses that it is known in the flame resistant fabric art to blend synthetic fibers with between 15 to 65 weight percent cotton to provide the fabric with the desired aesthetic hand properties, moisture absorption properties, and to minimize static electricity (see entire document including column 1, lines 62-66 and the paragraph bridging columns 4 and 5). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add between 15 to 65 weight percent cotton fibers to the yarn, because the cotton fibers provide the yarn with the desired aesthetic hand properties, moisture absorption properties, and to minimize static electricity.

In the event that it is shown that about 70% does not read on 60%, Campbell also discloses that modacrylic fibers are present for flame resistance (column 3, lines 18-23) while the aramid fibers are present for tensile strength (column 3, lines 25-40). Nelson also discloses that it is known in the flame resistant fabric art to blend synthetic fibers with between 15 to 65 weight percent cotton to provide the fabric with the desired aesthetic hand properties, moisture absorption properties, and to minimize static electricity. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the amount of modacrylic fibers, such as below 70 weight percent, to provide the yarn with more cotton fibers and/or aramid fibers, because it is understood by one of ordinary skill in the art that the weight percent of modacrylic, cotton, and aramid fibers determines properties such as flame resistance, tensile strength, aesthetic hand properties, moisture absorption properties, and static electricity properties, and because it has been held that discovering an optimum value of a result effective

variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

In re Geisler, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997) (Applicant argued that the prior art taught away from use of a protective layer for a reflective article having a thickness within the claimed range of "50 to 100 Angstroms." Specifically, a patent to Zehender, which was relied upon to reject applicant's claim, included a statement that the thickness of the protective layer "should be not less than about [100 Angstroms]." The court held that the patent did not teach away from the claimed invention. "Zehender suggests that there are benefits to be derived from keeping the protective layer as thin as possible, consistent with achieving adequate protection. A thinner coating reduces light absorption and minimizes manufacturing time and expense. Thus, while Zehender expresses a preference for a thicker protective layer of 200-300 Angstroms, at the same time it provides the motivation for one of ordinary skill in the art to focus on thickness levels at the bottom of Zehender's 'suitable' range- about 100 Angstroms- and to explore thickness levels below that range. The statement in Zehender that '[i]n general, the thickness of the protective layer should be not less than about [100 Angstroms]' falls far short of the kind of teaching that would discourage one of skill in the art from fabricating a protective layer of 100 Angstroms or less. [W]e are therefore 'not convinced that there was a sufficient teaching away in the art to overcome [the] strong case of obviousness' made out by Zehender.").

Regarding claims 11, 13-14 and 19, Campbell discloses that the yarn may be used to form fabrics, such as apparel (column 7, lines 12-17).

Regarding claims 13 and 14, considering that the fabric taught by the prior art is substantially identical to the claimed yarn in terms of constituents and constituent weight percentages, it appears that the fabric would inherently possess the claimed char length.

The Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

4. Claims 3-5 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,787,228 to Campbell in view of USPN 4,025,491 to Nelson as applied to claims 1, 11, 13-14 and 19 above, and further in view of USPN 4,865,906 to Smith, Jr. (hereinafter referred to as Smith).

Campbell discloses a yarn suitable to provide arc and flame protection comprising modacrylic fibers and aramid fibers (see entire document including column 1, lines 13-17 and column 4, lines 9-56), but Campbell does not specifically mention the use of both meta-aramid and para-aramid fibers. Smith discloses that it is known in the flame resistant fabric yarn art to include from 22 to 100 weight percent meta-aramid fibers and from 0 to 78 weight percent para-aramid fibers, on the basis of total aramid fiber, to produce a yarn with desired handle (see entire document including column 2, lines 38-42 and column 3, lines 15-30). It would have been

obvious to one having ordinary skill in the art at the time the invention was made to include from 22 to 100 weight percent meta-aramid fiber and from 0 to 78 weight percent para-aramid fiber, on the basis of total aramid fiber, because the yarn would possesses a desirable handle for comfort while also possessing the desired tensile strength.

5. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,787,228 to Campbell in view of USPN 4,025,491 to Nelson in view of USPN 4,865,906 to Smith as applied to claims 3-5 and 15-17 above, and further in view of USPN 5,824,614 to Gadoury.

Campbell does not specifically mention an anti-static component, but Gadoury discloses that it is known in the flame resistant yarn art to include carbon and/or metal fibers (see entire document including column 8, lines 40-59). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add carbon and/or metal fibers to the yarn, because the fibers would provide anti-static properties.

6. Claims 9-10 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,787,228 to Campbell in view of USPN 4,025,491 to Nelson as applied to claims 1, 11, 13-14 and 19 above, and further in view of USPN 5,824,614 to Gadoury.

Campbell does not specifically mention an anti-static component, but Gadoury discloses that it is known in the flame resistant yarn art to include carbon and/or metal fibers (see entire document including column 8, lines 40-59). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add carbon and/or metal fibers to the yarn, because the fibers would provide anti-static properties.

7. Claims 1, 3-5, 11, 13-17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 4,865,906 to Smith in view of USPN 4,025,491 to Nelson.

Regarding claims 1, 3-5, 11, 13-17 and 19, Smith discloses a yarn suitable to provide arc and flame protection comprising 25 to 85 weight percent polyacrylonitrile, 0 to 35 weight percent para-aramid, and 10 to 35 weight percent meta-aramid (22 to 100 weight percent meta-aramid fibers and from 0 to 78 weight percent para-aramid fibers on the basis of total aramid fiber) (column 2, lines 25-42).

Smith discloses that wool fibers may be added to provide better hand (column 2, lines 48-49), but Smith does not specifically mention the addition of cotton fibers. Nelson discloses that it is known in the flame resistant fabric art to blend synthetic fibers with between 15 to 65 weight percent cotton to provide the fabric with the desired aesthetic hand properties, moisture absorption properties, and to minimize static electricity (see entire document including column 1, lines 62-66 and the paragraph bridging columns 4 and 5). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add between 15 to 65 weight percent cotton fibers to the yarn, because the cotton fibers provide the yarn with the desired aesthetic hand properties, moisture absorption properties, and to minimize static electricity.

Regarding claims 11, 13-17 and 19, Smith discloses that the yarn may be used to form fabrics, such as garments (column 2, lines 54-59).

Regarding claims 13 and 14, considering that the fabric taught by the prior art is substantially identical to the claimed yarn in terms of constituents and constituent weight percentages, it appears that the fabric would inherently possess the claimed char length.

8. Claims 6-10 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 4,865,906 to Smith in view of USPN 4,025,491 to Nelson as applied to claims 1, 3-5, 11, 13-17 and 19 above, and further in view of USPN 5,824,614 to Gadoury.

Smith does not specifically mention an anti-static component, but Gadoury discloses that it is known in the flame resistant yarn art to include carbon and/or metal fibers (see entire document including column 8, lines 40-59). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add carbon and/or metal fibers to the yarn, because the fibers would provide anti-static properties.

Response to Arguments

9. Applicant's arguments filed 10/19/2006 have been fully considered but they are not persuasive.

Campbell in view of Nelson

The applicant asserts that about 70% does not encompass or read on 60% because there is a 10% difference between 70% and 60%. The examiner respectfully disagrees. Although the examiner agrees that 70-60=10, the reference (Campbell) clearly discloses that about 70% modacrylic fiber is preferably present (column 4, lines 9-14). The word "about" gives the percentage flexibility. Considering that the applicant has failed to show, or attempt to show, any unexpected result from the use of a yarn comprising 60% modacrylic fibers compared to a yarn comprising 70% modacrylic fiber, the applied prior art teaches the claimed invention with sufficient specificity.

The applicant asserts that one or ordinary skill in the art would not be motivated to employ 60% modacrylic fibers in view of the teachings of "about 70% modacrylic fibers." The examiner respectfully disagrees. Firstly, motivation is not necessary because Campbell teaches the claimed invention with sufficient specificity. Secondly, even assuming *arguendo*, that Campbell fails to disclose the claimed modacrylic weight percent with sufficient specificity, Campbell discloses that modacrylic fibers are present for improved flame resistance and dying capability, aramid fibers are present for improved strength and energy absorption (column 3, lines 17-40 and column 4, lines 35-40), and Nelson discloses that cotton fibers provide the improved aesthetic hand properties, moisture absorption properties, and to minimize static electricity (column 1, lines 62-66 and the paragraph bridging columns 4 and 5). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the amount of modacrylic fibers, such as to 60 weight percent, to provide the yarn with more cotton fibers and/or aramid fibers, because some applications desire higher strength, higher energy absorption, improved aesthetic hand properties, improved moisture absorption properties, and/or minimal static electricity over the benefits (higher flame resistance and higher dying capability) of more modacrylic fibers and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Campbell suggests that there are benefits to be derived from reducing the weight percent of modacrylic fibers. A reduced weight percent of modacrylic fibers, and thus an increase in the weight percent of aramid fibers and/or cotton fibers, would result in higher strength, higher energy absorption, improved aesthetic hand properties, improved moisture absorption properties,

and/or minimal static electricity. Thus, while Campbell appears to express a preference for at least 70 weight percent modacrylic fibers, at the same time Campbell provides the motivation for one of ordinary skill in the art to focus on modacrylic fibers levels at the bottom of the preferred range. Campbell falls far short of the kind of teaching that would discourage one of skill in the art from fabricating a yarn comprising 60 weight percent modacrylic fibers.

***In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997) (Applicant argued that the prior art taught away from use of a protective layer for a reflective article having a thickness within the claimed range of "50 to 100 Angstroms." Specifically, a patent to Zehender, which was relied upon to reject applicant's claim, included a statement that the thickness of the protective layer "should be not less than about [100 Angstroms]." The court held that the patent did not teach away from the claimed invention. "Zehender suggests that there are benefits to be derived from keeping the protective layer as thin as possible, consistent with achieving adequate protection. A thinner coating reduces light absorption and minimizes manufacturing time and expense. Thus, while Zehender expresses a preference for a thicker protective layer of 200-300 Angstroms, at the same time it provides the motivation for one of ordinary skill in the art to focus on thickness levels at the bottom of Zehender's 'suitable' range- about 100 Angstroms- and to explore thickness levels below that range. The statement in Zehender that '[i]n general, the thickness of the protective layer**

should be not less than about [100 Angstroms]' falls far short of the kind of teaching that would discourage one of skill in the art from fabricating a protective layer of 100 Angstroms or less. [W]e are therefore 'not convinced that there was a sufficient teaching away in the art to overcome [the] strong case of obviousness' made out by Zehender.").

The applicant asserts that there is no motivation to add cotton fibers to the yarn, as taught by Nelson, because Nelson discloses that hydrophilic (cotton) fibers have poorer fire-retardant properties than polyester fibers and that there is a need for polyesters having high concentrations of fire-retardants (paragraph bridging columns 1 and 2). The examiner respectfully disagrees with applicant's logic. Nelson clearly discloses that it is known in the flame resistant fiber art to add cotton fibers to provide the fiber with the desired aesthetic hand properties, moisture absorption properties, and to minimize static electricity (see entire document including column 1, lines 62-66 and the paragraph bridging columns 4 and 5). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add cotton fibers to the yarn, as taught by Nelson, because the cotton fibers would provide the fire-retardant yarn with the desired aesthetic hand properties, moisture absorption properties, and minimized static electricity and because some applications desire hand properties, moisture absorption properties, and/or minimized static electricity properties over increased fire-retardant properties.

The applicant asserts that Nelson is nonanalogous art because cotton possesses poorer fire-retardant properties than polyethylene terephthalate fibers and because Nelson mentions self extinguishing fibers. In response to applicant's argument that Nelson is nonanalogous art, it has

been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Nelson is in the field of applicant's endeavor, which is fire/flame retardant fibers.

The applicant asserts that the examiner has ignored the requirement of Nelson of a need for a specific fiber to provide self-extinguishing properties. The examiner contends that cotton fibers would provide the fire-retardant yarn of Campbell with the desired aesthetic hand properties, moisture absorption properties, and/or minimized static electricity regardless of Nelson's alleged need of a specific fiber to provide self-extinguishing properties.

Smith in view of Nelson

The applicant asserts that oxidized polyacrylonitrile is not a modacrylic for the reasons set forth in the declaration filed on 10/19/2006. The examiner respectfully disagrees. Firstly, it is noted that page 3 of the declaration ends with an incomplete sentence, therefore, the declaration is not completely comprehensible. Secondly, the declaration incorrectly assumes that a conventional dictionary definition defines "modacrylic fiber" as used in the current claims. The specification clearly states, "By modacrylic fibers is meant acrylic synthetic fiber made from a polymer comprising primarily acrylonitrile." (see page 3, lines 14 and 15 of the current specification) MPEP 2111.01 III states:

"Where an explicit definition is provided by the applicant for a term, that definition will control interpretation of the term as it is used in the claim. *Toro Co. v. White Consolidated Industries Inc.*, 199 F.3d 1295, 1301, 53 USPQ2d 1065, 1069 (Fed. Cir. 1999)."

The examiner cites USPN 4,970,111 to Smith, Jr. (see column 3, lines 49-68) as evidence that, according the definition set forth in the current specification, oxidized polyacrylonitrile is a modacrylic.

Conclusion

10. All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR

1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T. Piziali whose telephone number is (571) 272-1541. The examiner can normally be reached on Monday-Friday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

11/1/06

atp

ANDREW PIZIALI
PRIMARY EXAMINER